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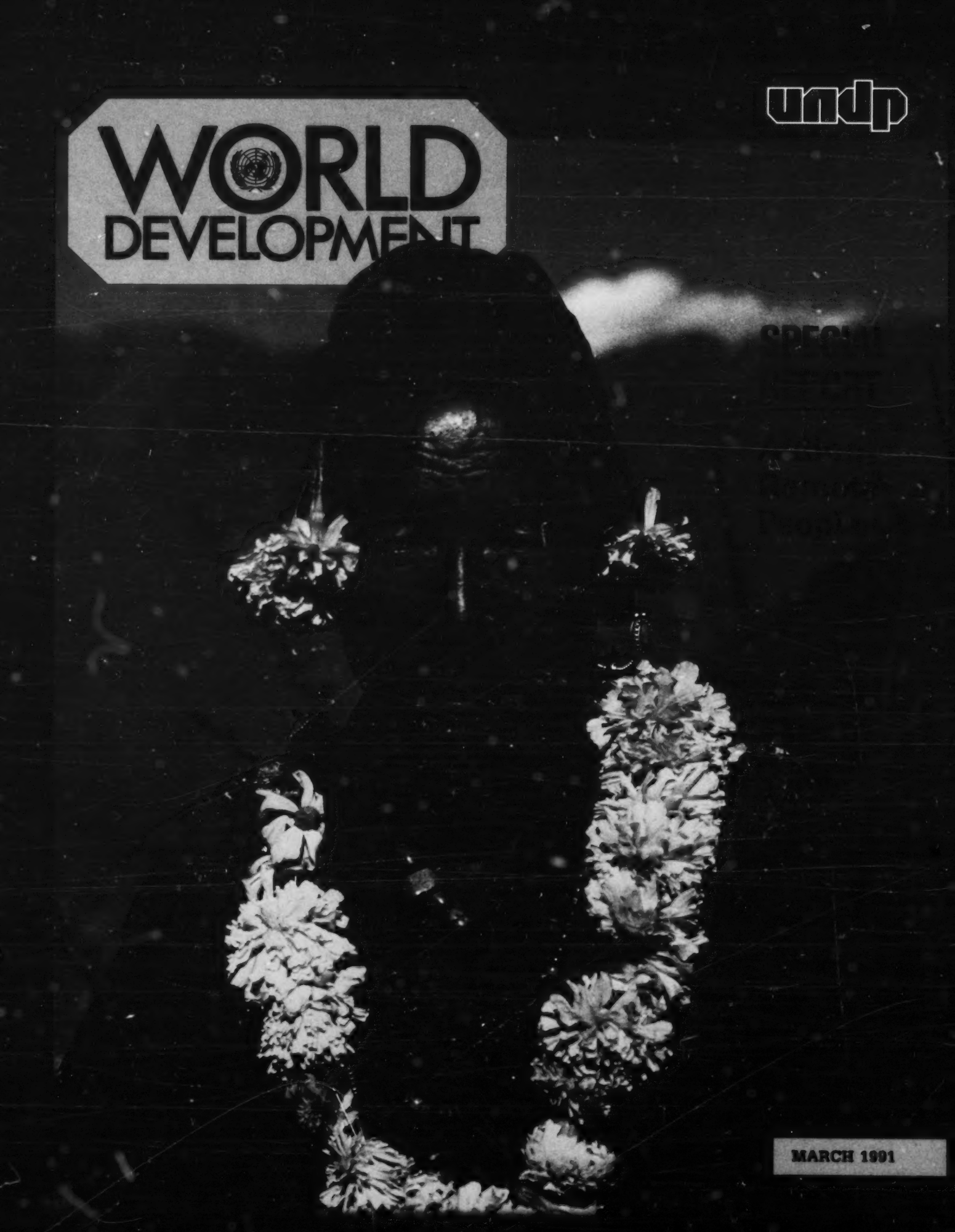

MARCH 1991

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WORLD DEVELOPMENT

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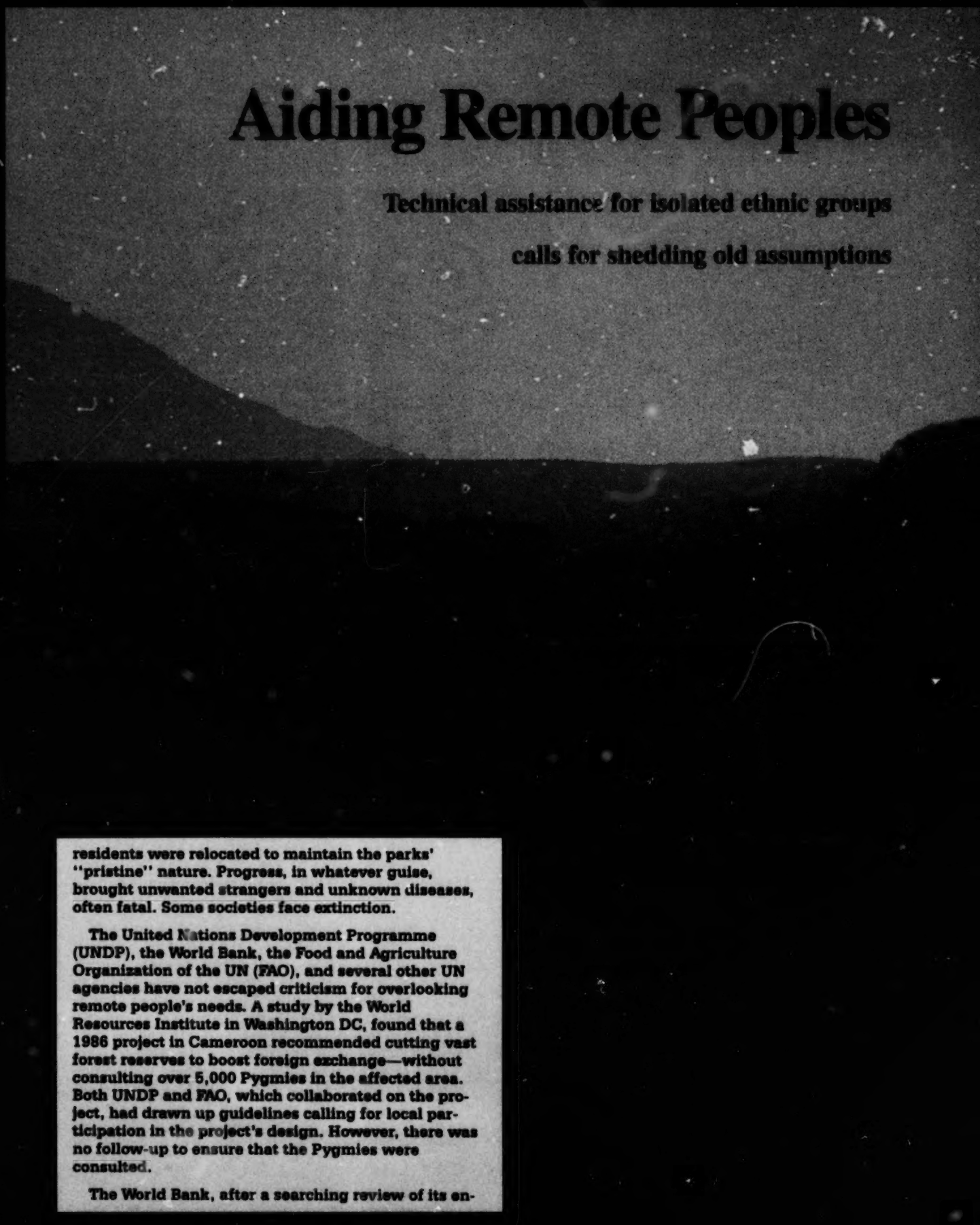
Cover: **Nepalese from the Seti Zone. Photo by Sid Kane.**

READEX FICHE

By Lloyd Garrison

United Nations, New York—They live off the beaten track, in deserts and forests and high mountain passes. Asians call them tribals. In sub-Saharan Africa, they are Bushmen and forest people. In Latin America, they are Indians. An entire ethnic group may number no more than 30,000 people—as Contributing Editor Mary Lynn Hanley learned during her visit to Central Africa's Aka Pygmies.

For years, such isolated groups were ignored by their governments and international donors. But when "civilization" came, it often struck with tidal force. Big dams flooded them out. Chain saws felled their oldest and best trees. In the name of conservation, some national parks were created—after



Aiding Remote Peoples

Technical assistance for isolated ethnic groups calls for shedding old assumptions

residents were relocated to maintain the parks' "pristine" nature. Progress, in whatever guise, brought unwanted strangers and unknown diseases, often fatal. Some societies face extinction.

The United Nations Development Programme (UNDP), the World Bank, the Food and Agriculture Organization of the UN (FAO), and several other UN agencies have not escaped criticism for overlooking remote people's needs. A study by the World Resources Institute in Washington DC, found that a 1986 project in Cameroon recommended cutting vast forest reserves to boost foreign exchange—without consulting over 5,000 Pygmies in the affected area. Both UNDP and FAO, which collaborated on the project, had drawn up guidelines calling for local participation in the project's design. However, there was no follow-up to ensure that the Pygmies were consulted.

The World Bank, after a searching review of its en-

vironmental policies in 1987, conceded "less than satisfactory supervision" of projects conceived from the top down which had the effect of undermining isolated ethnic groups. In the 1970s, the Bank had no more than four environmentalists on the staff. Today, there are more than 100.

"There's no question the Bank has beefed up its environmental department," says Clara Braddio of Survival International, a London-based cultural advocacy group. But she remains sceptical of the long-term results. Rainforest Action International, an American non-profit organization in San Francisco, California, recently produced a full-page ad in the *New York Times* accusing the Bank of trying to turn the forests of the Amazon into one giant shopping mall.

But David Wilkie, a Scottish expert on Africa's Pygmies, credits the Bank with "a stunning change in policy." And American Pam Solo, executive director of Cultural Survival of Cambridge, Mass., which advocates land rights for indigenous peoples, sees the Bank and UN agencies as "far from perfect" but increasingly open to dialogue with experienced non-governmental organizations (NGOs).

Not all NGOs see eye to eye. "Some environmental groups," says Ms. Solo, "are wary of leaving conservation in the hands of local people." At the opposite extreme is the Rousseauian view of the "noble savage" living without kings, without laws, in perfect harmony with nature. Some contend that today's noble savage is the ultimate environmentalist.

"That's not true at all," says Prof. Kent Redford, an American biologist at the University of Florida's Center for Latin American Studies. "Tribes of the forest may possess important knowledge about their environment, but studies have shown that when they have trouble making ends meet, they will trash the forest like anyone else—and will eventually move away to the cities, leaving what's left of the forest behind."

Increasingly, remote peoples are taking matters in their own hands. Troubled by a loss of territory to land-hungry farmers, Panama's Kuna Indians have created their own park and set out to boost income through controlled tourism. Scores of diverse Indian groups in Brazil have formed a national lobbying organization to counter encroaching dam builders and lumbermen.

Few environmentalists still believe that the best policy is to fence off remote peoples and throw away the key, permitting them to live forever in splendid isolation. Most isolated societies want development—so long as it doesn't threaten their culture. "The fact is," says Cultural Survival's research director, Jason Clay, "indigenous groups don't want to live in G-strings and continue walking barefoot in the forest."

Mr. Clay's observation was borne out by Cherie Hart during her initial contact with the Waimiri Indians in the Amazon. "The first thing I was asked was whether I had any transistor batteries," recalls Ms. Hart, whose report appears on page 15.

Indeed, with new guidelines in place and new partnerships with over 100 national and international NGOs, recent UN development initiatives among remote peoples are no longer seen as blunt instruments of progress. UNESCO has created over 245 biosphere reserves, some of which protect remote regions from colonization and industrialization. The World Bank, working closely with the World Wildlife Fund, USAID and the Worldwide Fund for Nature in Switzerland, has used satellite photos to map a new 1.7 million hectare park to protect Pygmies in Zaire's Ituri Forest.

As outlined in the following special report, UNDP's latest initiatives employ patience—to ensure that local leaders fully participate—and imagination in designing assistance that is relevant to local needs. The new participatory approach is amply illustrated by Sid Kane's report on what is now in education in the chill mountain passes of Nepal's remote Seti Zone. In a region long suspicious of outsiders, adults and children are being taught to read and write while learning how to preserve their forests, dig latrines and build fuel-efficient cooking stoves. Young and old trek up to three days to acquire these new tools for development. ■

Out of the Forest

By Mary Lynn Hanley

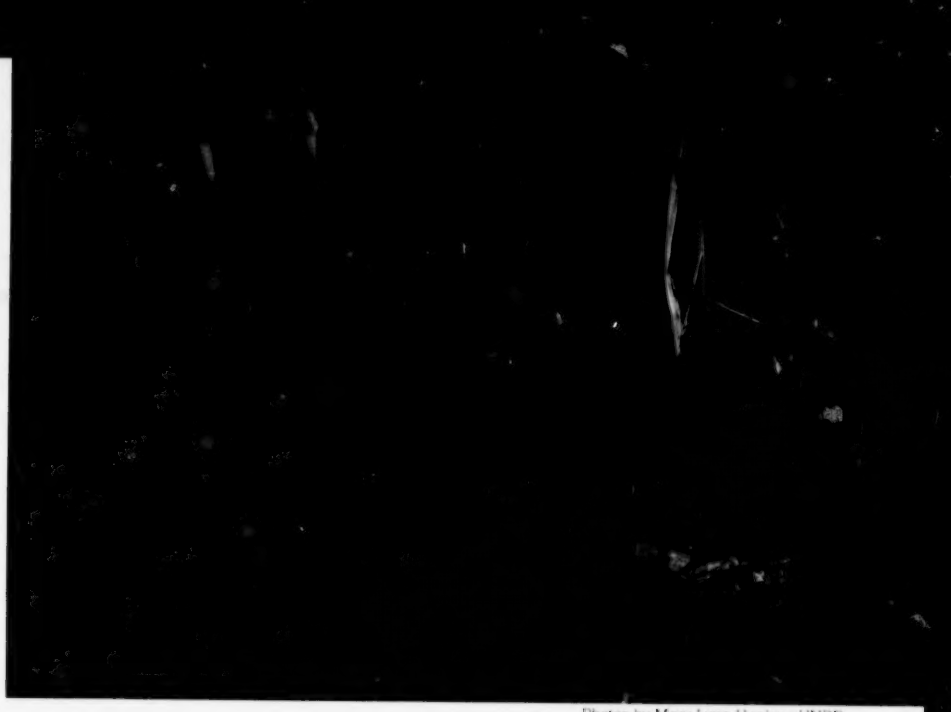
M'Baiki, Central African Republic—Zawé and and his wife crouch in the doorway of their small, leafy hut in a clearing in the forest. Nearby, two young mothers contentedly nurse their babies. Bird songs pierce the cool morning air. A young boy swings from a sturdy vine hanging from the towering canopy of trees overhead.

The old man carefully considers each question put to him by the visitors from the city, consulting his wife before responding. The caterpillar season is just about over and it is the time for gathering wild honey, he says. The forest is full of game, especially antelope and gazelle. The young men have already left for the day's hunt, but he is too old to go with them now.

Zawé still works on a nearby coffee plantation, however. The African who

Pygmies who leave their sanctuary risk losing their culture

Mary Lynn Hanley, UNDP



Zawé, an Aka elder, with his wife in their hut.

Photos by Mary Lynn Hanley / UNDP

employs him he calls his "master." In return for his labour he receives a very strong home-made liquor—a treat, he says, that the whole family enjoys. Money is a foreign concept, irrelevant to forest life.

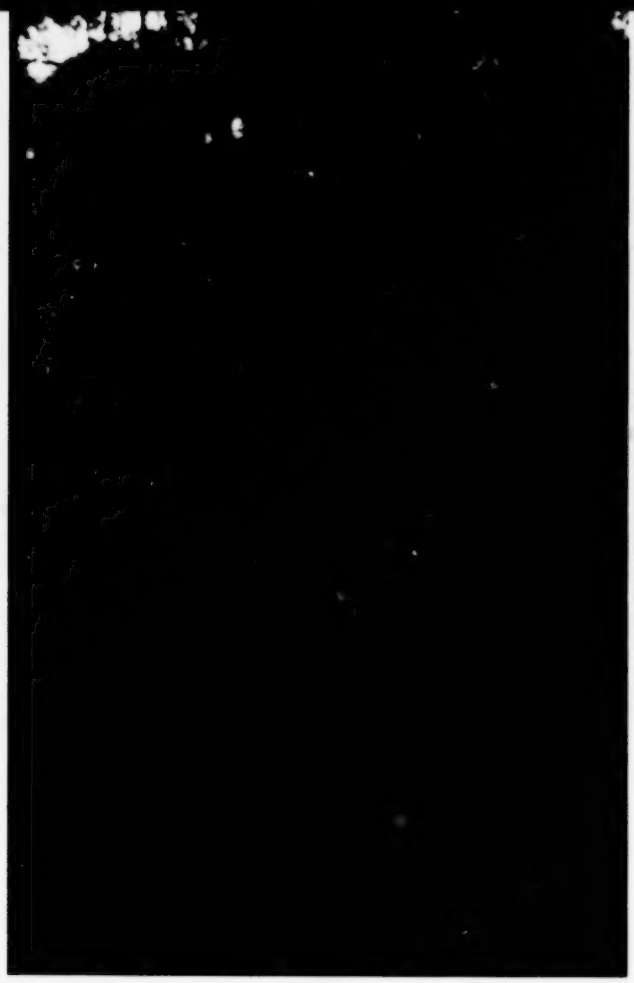
Zawé is an Aka Pygmy. He lives in the rain forest, a two and one-half hour drive—but centuries removed—from Bangui, the capital city of the Central African Republic, also known as CAR. While he and his clan are still able to maintain the nomadic hunting and gathering existence Pygmies have led for millennia, civilization is at his doorstep. On the other side of the forest, not five kilometres from Zawé's camp, a logging company has begun to exploit the rich stands of timber.

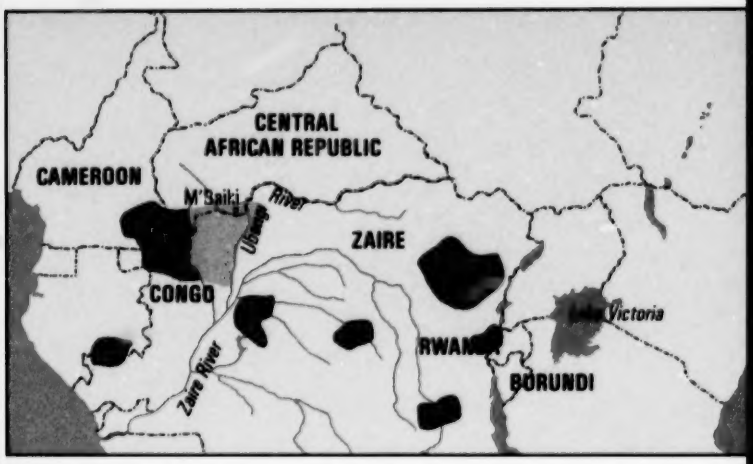
Gaston Nguerekata, CAR's High Commissioner for Scientific Research, points out that logging, the clearing of land for agriculture and cutting trees for fuelwood is seriously diminishing the country's three million hectares of dense, humid forest. "As the forest retreats the Pygmies begin to settle down and there are grave consequences for their health," he says. "They begin to forget some of their traditional medicine, which is often very effective." They also lose some of the natural immunities developed in the forest and experience protein deficiencies as their hunting declines.

Wally N'Dow, Resident Representative of the United Nations Development Programme (UNDP) in the CAR, is determined to ensure that the Pygmies are included in the country's development efforts. "The Pygmies have rights to the benefits of the modern world, which is increasingly affecting them," he says. "A government must improve the lot of all its citizens."

But Mr. N'Dow is equally determined to avoid suggesting any initiatives that would undermine Pygmy culture. To understand how best to address their needs he has consulted Abel Koulaninga, a Central African education specialist who has written a doctoral thesis on traditional Pygmy education. According to Mr. Koulaninga, the mere act of settling down in one place poses a grave threat to Pygmy culture. Within the more permanent Pygmy communities he has found family tensions resulting from a disruption of the traditional complementary economic roles of men and women, as well as a lessening of the spirit of group co-operation, vital for survival in the forest. Among adolescents he has even noted a reluctance to hunt for game, the every essence of the Pygmy way of life.

As a group, Pygmies are distinguished by their small stature, ranging from 1.45 to 1.50 metres, as well as by their light brown skin and extended abdomens. They live in the equatorial forest of Central Africa, extending from southwestern Cameroon on the Gulf of Guinea eastward to Burundi and the





Aka Pygmies
Other Pygmy groups

Young Aka woman with a basket used to collect edible plants.

Great Lakes. They are thought to number about 200,000.

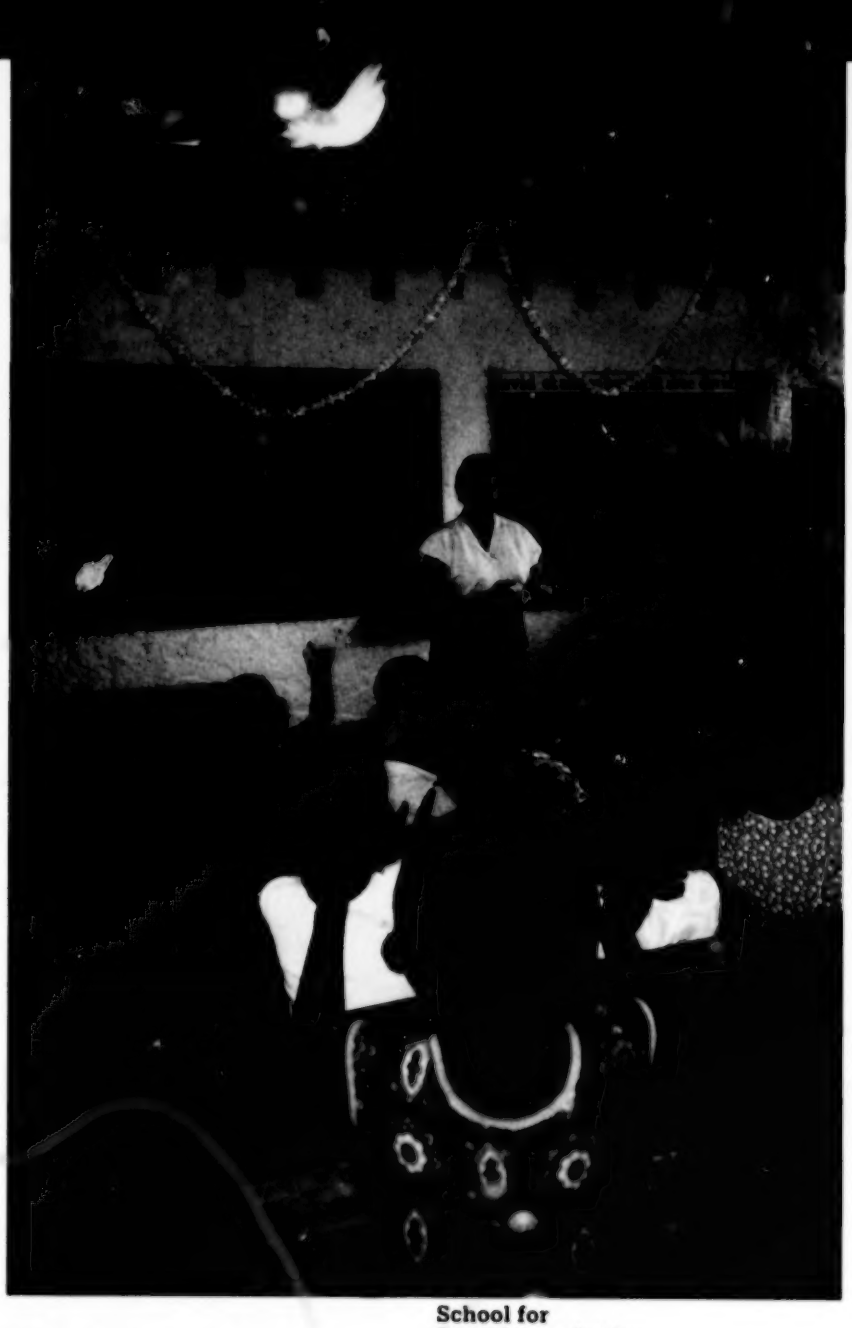
"Stories of Pygmies being given as gifts to the ancient kings of Egypt date back to the sixth century B.C.," says Mr. Koulaninga. "They are without a doubt the oldest inhabitants of this country." There are an estimated 20,000 Pygmies in the CAR, which has a total population of three million.

Mr. Koulaninga has observed that the Pygmies' only preoccupation is to secure their daily bread. "When that is accomplished their day is complete," he says. Men hunt game with bows and arrows, lances or nets. They gather wild honey, which requires considerable skill in climbing trees. Women are responsible for gathering wild berries, mushrooms, edible roots, termites and the large orange and black caterpillars which are highly prized as a delicacy and provide a good source of protein. Women also build the huts from leaves and thatch. They catch fish by constructing small dams in rivers and streams. They fashion strong hunting nets from forest vines and help in chasing game into their folds.

The Pygmies are a joyful people who love to sing and dance. They have both an intimate knowledge of and a great respect for their habitat. "From the 3,000 vegetable species the forest contains, they recognize which plants are edible, which are poisonous, and which have medicinal properties," says Mr. Koulaninga. "They consume only 12 of the 600 species of animals found there. They have a natural sense of conservation."

Another Pygmy trait is a total absence of any concept of wealth or surplus accumulation. This is only practical for people accustomed to changing camp three or four times a year to benefit from whatever products are in season. However, life in the forest can be harsh. Up to half of the children die before the age of five, though once they have crossed this barrier they are remarkably hardy.

"Out of the forest the Pygmies are very ill at ease," says Mr. Koulaninga.



School for Pygmies and other Africans led by Sister Marie-Pascal.

Nevertheless, there are certain needs for which they depend upon nearby non-Pygmy African villagers, with whom they have developed a symbiotic "Pygmy-master" relationship. In colonial days, villagers, under pressure to supply foreign traders with rubber and ivory, relied on the Pygmies to work on plantations and hunt elephants. In return, the forest dwellers received iron with which to make hatchets and lances, as well as salt and staple crops like manioc.

This relationship persists today. Periodically the Pygmies make their camps on the outskirts of African villages, trading smoked meat and other forest products, as well as their labour, for cultivated crops, cooking pots and other finished goods. Especially favoured are alcohol and tobacco, for which men, women and children have all developed a strong appetite.

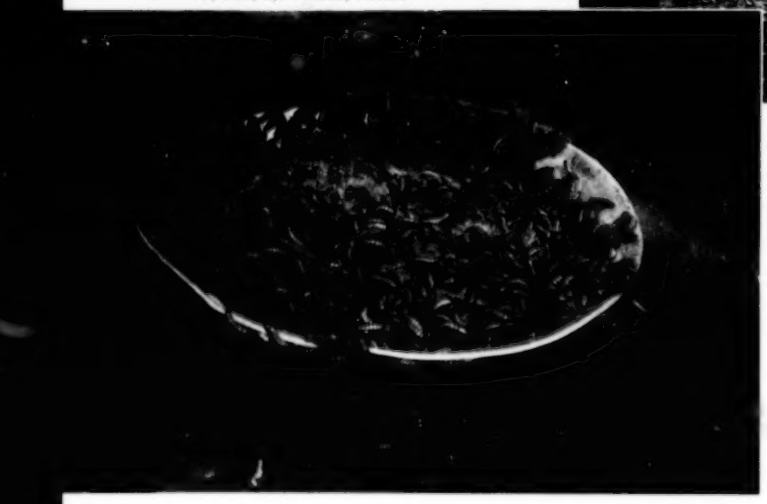
"Pygmy-master" relationships usually endure through the years. Mr. Koulaninga has found, with a villager passing "his Pygmies" along to his sons. For their part, Pygmies depend on their "masters" for protection. Indeed, the "master" will defend them in any dispute with another villager.

While Pygmies are free to return to the forest when they choose, with their lack of understanding of the value of money they can easily be exploited. They also suffer psychologically from the fact that villagers consider them inferior. This is especially true in the more settled Pygmy communities. "These Pygmies want education for their children," says Mr. Koulaninga. "They say, 'It is because our masters know how to read and write that they command us. At least our children will be free.'"

How to meet the health, education and social needs of the Pygmies in a way that will not disrupt their culture is a challenge for Central African policy makers. "We should give all our people access to education, regardless of their origin," says Jean-Marie Bassia, Minister of Higher Education. "We must create conditions in which the Pygmies can live in harmony with their

An Aka woman welcomes gifts of soap and cooking pots from Abel Koulaninga.

Photos by Mary Lynn Hanley / UNDP



Caterpillars: a Pygmy delicacy.

environment. But if basic education is provided, it must be with their full consent."

Sister Marie-Pascal, a French Catholic nun who has worked in the Central African Republic for over 20 years, has taken up the challenge of educating young Pygmies. For two years she has taught a first grade class in which Pygmy and other Central African children study together. Teaching is conducted in Sango, the local language, and in French. "There are some Pygmy children who work very hard," Sister Marie-Pascal says. "But at certain times they go off into the forest. When the caterpillar season comes along we have to wait until it's over for their return."

Mr. Koulaninga notes that decision-making by consensus, which prevails in the forest, spills over into the classroom. "If one Pygmy child is asked a question he does not immediately respond," he says. "He consults his Pygmy classmates and gives the group's response. They see the teacher's question as a verbal aggression against which they must collectively defend themselves."

Sister Marie-Pascal says that one of her hardest tasks is teaching the children to keep clean. Bathing is infrequent in the forest. Among her greatest needs are clothes and shoes for her young charges. Pygmies normally wear very little and children, often nothing. "I think it makes them feel worthwhile when they have clothes," she says. "If they don't have them the other children make fun of them."

Building on such limited experiences, UNDP is exploring with government officials and representatives of non-governmental organizations how best to meet the Pygmies' health and education needs. As a first step, UNDP sponsored a seminar late last year on Pygmy life, attended by government and UN officials as well as members of the diplomatic corps. Mr. Koulaninga presented his findings on Pygmy culture. The problems of providing Pygmies with appropriate education and other assistance were discussed. Several participants observed that providing specially-tailored education for a minority comprised of less than one per cent of the total population was just not possible in a country already strapped for education funds. The adult literacy rate in the CAR is only 33 per cent, total school enrolment is 47 per cent, and the education system badly needs revamping to ease mounting unemployment.

Nevertheless, many agreed that Jean Jacques Rousseau's philosophy of leaving the "noble savage" to his own devices should no longer be applied. "Experiments in trying to aid the Pygmies in settling down need to be evaluated," says Mr. Bassia. "The interaction of an individual and his environment is a very important factor in making him feel at home. The essential thing is to give all Central Africans what they need to get along in society, including the Pygmies."

Mr. Koulaninga agrees. "The process of modernization seems irreversible," he says. "If the Pygmies can live in both worlds its effects on them will not be so serious, but we must offer them a choice." ■

The rugged Seti Zone makes up nine per cent of Nepal's land mass.

Breaking Resistance to Education in Nepal's Remote Seti Zone

By Sid Kane

Manakot, Nepal—By foot, it takes three days to reach the small village of Manakot from Kolti, the town with the nearest airstrip. Like many other Nepalese villages in the shadows of the snow-capped Himalayas, Manakot is a tiny community of mud and stone houses set at the bottom of a valley and surrounded on all sides by steep hills and forest.

It seems an unlikely spot to hold a month-long workshop in teacher training, but a group of 18 young women have trekked for days just to reach this isolated place. The mere act of leaving their homes was no easy choice. "This wilderness can be very dangerous," one of the teenagers says with fear in

her voice. "There are ghosts that live here, and at any time they can attack." Why would they? "For revenge," she shoots back.

Life in the hills of the Seti Zone is filled with hard choices and strange beliefs. The region is so remote that one popular guidebook does not include it on a map of Nepal, even though it occupies an area of 12,550 square kilometres, or nine per cent of the country's land mass. In most villages, there are no roads or telephone lines, and only rare contacts with the outside world. Sanitation is non-existent. Blizzards, severe hailstorms and landslides are common hazards. Life expectancy is 40 years. Illiteracy is endemic.

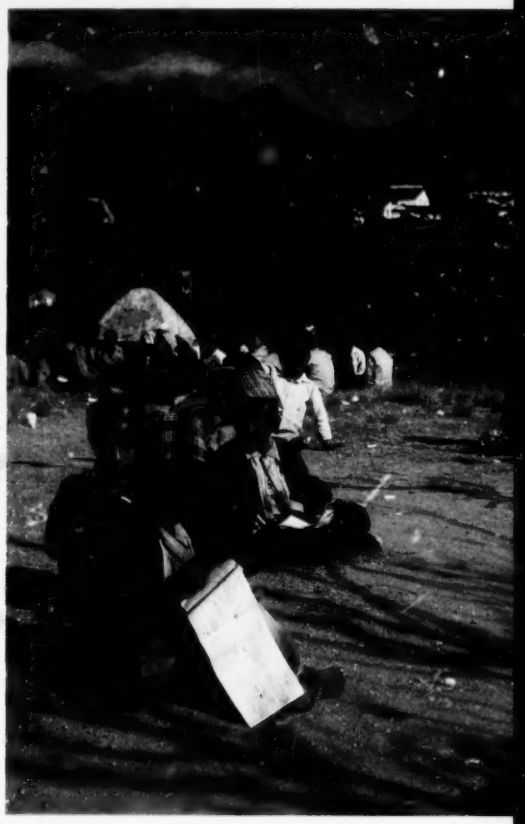
But an unusual programme in rural education is helping to change things by teaching adults and girls—the two least educated groups in the Seti—how to read and write, while also imparting practical skills for improving their communities. In training courses that last nearly five months, lessons combine literacy training with instruction in how to care for forests, maintain trails, grow more vegetables, and build latrines and fuel-efficient cooking stoves.

Those who later become instructors must take an added month-long training course. "It's brought new opportunities into my life," says 15-year-old Ramah Kumari Shah, who took the basic course three years ago in Tate, her home village, and is now training to become a teacher. "As a student, I learned to read and write, and about farming, health and first-aid. Now I want to help others have the same chance."

Few girls get a chance for an education in the Seti Zone, where 80 per cent of those in village schools are boys, although most of them do not make it beyond the fourth year. Girls, traditionally, are destined for early marriage and farm work, which is why they are specifically targeted for help. The older adults, who are virtually all illiterate farmers, have never been educated because Nepalese schools were reserved for well-to-do families until the 1970s. Nepal's overall literacy rate is 34 per cent.

Photos by Sid Kane / UNDP

Teen-age girls begin a month-long instructors workshop in Manakot.



Boys far outnumber girls in schools in the Seti Zone.

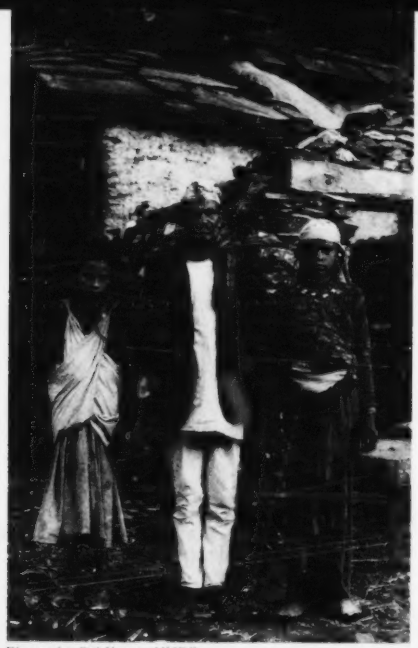
After the five-month special course, some graduates go on to formal schooling. Others continue learning at newly created village libraries, which are well-stocked with simple reading materials on rural development. In addition to government funding, the project, now in its tenth year, has received US$2.7 million from the United Nations Development Programme (UNDP) and $2 million from UNICEF. It is also supported by the Arab Gulf Fund and is administered by the United Nations Educational, Scientific and Cultural Organization.

"We've finally found a way to improve the quality of life for those hardest to reach," says Jerrold Berke, UNDP's Resident Representative in Nepal. "We're hoping to take the same approach in other remote areas."

The training getting underway on a clear November morning, in an open classroom in the valley of Manakot, is for young women who will become instructors for girls. In a few weeks, upon returning to their distant villages, they will visit isolated farms and try to coax illiterate parents to allow their daughters to learn to read and write. By all accounts, some of their appeals will succeed. Over 6,000 girls have attended 320 courses held in hundreds of villages. And 19,000 adults have benefited from classes that are tailored to their needs.

In the last 20 years, during which education in Nepal has become popularized, the number of schools, even in this isolated region, has multiplied. But in the Seti Zone people are still suspicious of schooling and often keep their young at home. Learning that is coupled with rural development has helped to overcome scepticism. And the courses, offered between the months of November and March, do not conflict with the busy planting and harvest seasons.

"Ours is a practical approach geared to train Nepalese for survival in remote



Laxmi Raj Joshi with his daughters in the village of Chuthi Bagar.

Photos by Sid Kane / UNDP

Uttam Prasad Upadhyay is monitoring the Seti Project.

hardship areas," says Peter Crowley, the programme's chief technical adviser. "The government extension system often doesn't reach this region. There are no doctors or agricultural experts to speak of, so people must be taught how to improve their own lives."

This year, 100 courses are being run for girls and 300 for illiterate adults. While most supplies are provided by the project, some are produced locally. Ink is sometimes made from berries, simple pens from bamboo and chalk from clay.

"I took the adult course to learn about cleanliness, about growing new vegetables and about preparing prescriptions for common stomach ailments," says Bharu Kumari Budha, who lives in the small village of Simla, a two-day walk from here. "I never thought that I would read and write because my parents kept me from school. Like most girls, I had to stay home and work in the fields."

Aside from the innovative training, funds have also been earmarked for the construction of new schools and the improvement of others by adding latrines, vegetable gardens, running water and playgrounds. Established teachers have been able to sharpen their skills through training workshops and have added health care and hygiene to their lesson plans. Over 55,000 packets of vegetable seeds have been donated, as well as 35,000 fruit tree saplings, all flown in by plane. These items, along with hundreds of blackboards, medical kits and books, are carried by porters across steep ridges and rivers on ancient footpaths which lead from village to village. To help administer the project, a network of "resource centres" has been created throughout the region to provide supervision and training for teachers, and to help distribute learning materials and supplies.

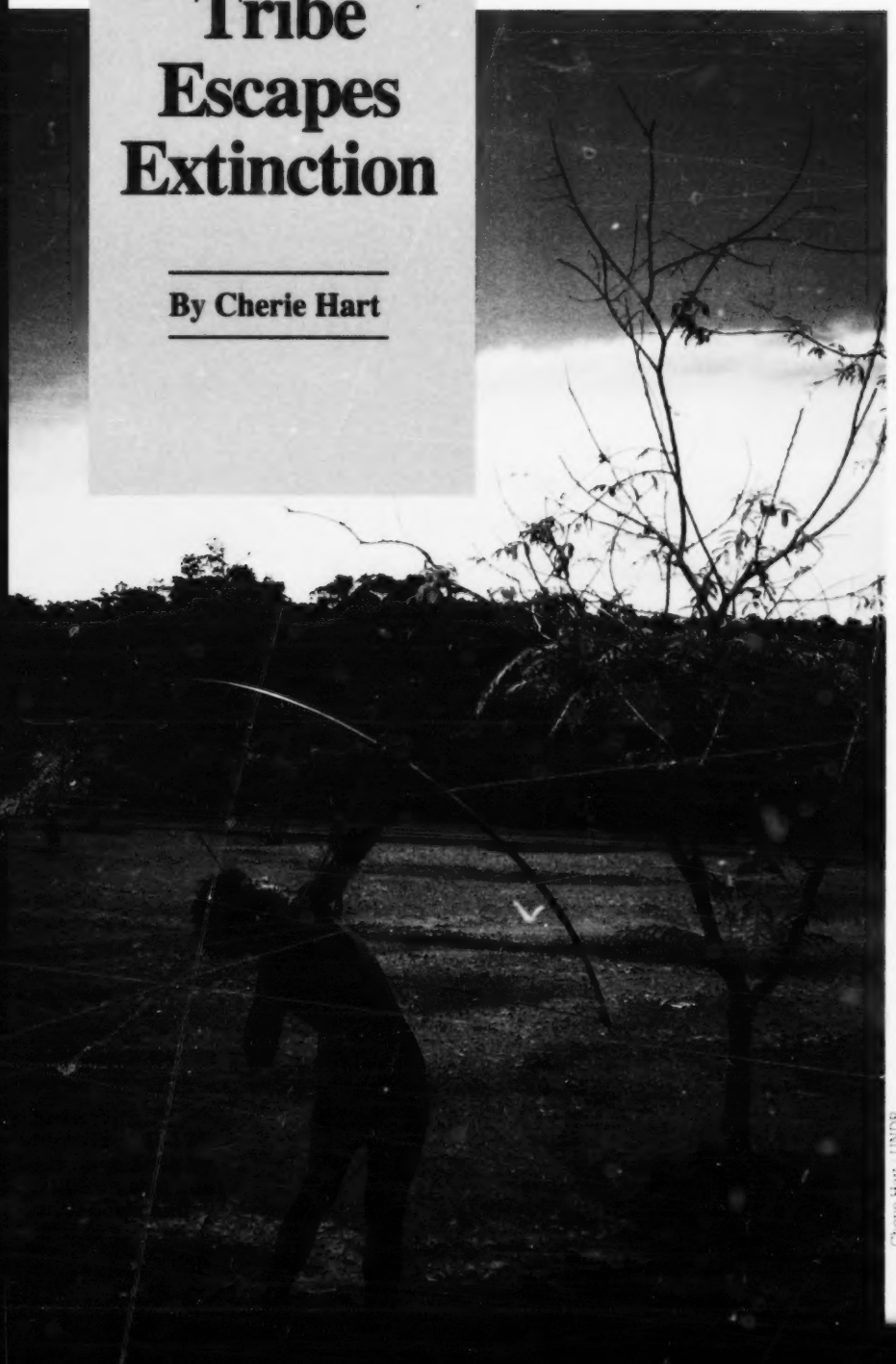
"Before this programme these people didn't think about improving their communities, and we've helped change that," says Uttam Prasad Upadhyay, the project's monitor and evaluation expert, who regularly visits Seti's isolated communities on foot, carrying everything he needs on his back.

One obstacle that remains, however, is the reluctance of many adults to allow their children to receive schooling, fearing, perhaps, that no one will be left to work on the farms. Yet many young men are leaving the maize and millet fields anyway, to seek work in India. "The people here did not want education until it was relevant to their lives, and still they need to be convinced," Mr. Upadhyay says.

But this resistance is slowly waning, indicating that even Seti's rugged terrain cannot block change forever. "Life here can be very hard," says Laxmi Raj Joshi, a farmer in the village of Chuthi Bagar, who owns a primitive stone house by a river bank, surrounded by mile after mile of alpine forest. "My older daughter didn't learn to read or write," he says, while taking water from the river, "but my younger children will. I want them to have a better life, even if they must leave here." ■

A Brazilian Tribe Escapes Extinction

By Cherie Hart



Cherie Hart / UNDP

Manaus, Brazil—For hundreds of years, Brazil's Waimiri Indians burned their dead and scattered the ashes over nearby Amazonian rivers. One tragic day in 1981, when 21 Waimiri died from measles, the tribe inexplicably broke with their ancient tradition and buried the dead. For the Waimiri, death was becoming a way of life. In percentage terms, the human loss that day was the equivalent of 10 million people dying in the United States.

During the last 20 years, other changes, none of the Waimiri's making, swept over their world. Favoured hunting grounds disappeared as highway BR-174 sliced through their jungle, and miners pushed onto their land. Vast reservoirs created by a new hydroelectric dam flooded thousands of hectares of forest.

Social patterns shifted too. The Waimiri abandoned their communal thatched homes in the forest to live in separate dwellings along the new highway. No longer dressed in twine and leaves, they began wearing store-bought clothes. Ancient festivals marking rites of passage no longer seemed important. Jungle paths were deserted.

Waimiri Indians are on a journey towards survival

as the Indians chose to trade and barter with the growing traffic along the highway.

And the Waimiri buried more and more of their dead. Their numbers were leveled not by war or natural disasters, but simply by the effects of outsiders bringing strange diseases and invading their land. The Waimiri's numbers plummeted from 6,000 at the turn of the century to 488 today.

But just as they hovered on the verge of extinction, the Waimiri were able to turn back the clock of destruction. Through a series of innovative projects, a healing process began which has saved them from disease, and is slowly helping them retrieve the core of their rich cultural past.

"They can never totally return to the way they were," says Porfirio Carvalho, a consultant for Indian Affairs for the Electric Companies of Northern Brazil (Eletronorte), and former officer of Brazil's National Indian Foundation (FUNAI). "But now the Waimiri are regaining some of what was lost." Mr Carvalho is author of *Waimiri Atroari—The Untold Story*, a book which put him in jail for divulging government documents detailing atrocities against the Indians.

Ironically, Mr. Carvalho once had every reason for turning his back on the Waimiri. In bitter struggles to save their land, the Waimiri fought against all intruders, and in 1974, four of Mr Carvalho's FUNAI colleagues were killed by the tribe. He survived the attack only because he had left the jungle the day before to get married. Despite the dangers, Mr. Carvalho returned to the Waimiri in 1978, determined to continue working for their protection.

To this day, the Waimiri will not tell him why they spared his life when he returned to their village. When asked why he was willing to risk death to work with the Indians again, Mr. Carvalho shrugs and says, "I don't know. I have a mystical connection with them. I just knew I had to come back."

Waimiri lands in northern Brazil

Photos by Cherie Hart / UNDP

This communal home is shared by an entire village.

The first real assault on the tribe began in the early 1970s when Brazil's then military government launched a network of roads throughout Amazonia. Construction of BR-174, the main north-south highway which cuts through the Amazon jungle for 700 kilometres from Manaus to Boa Vista, introduced measles, malaria, flu, tuberculosis and a host of other diseases to the 12 main Waimiri villages. While the Indians fought fiercely against the white man's encroachments, their immune systems were powerless against disease.

Then came the arrival of the Paranapanema mining company, which simply took over 526,800 hectares of Waimiri land, bringing even

Over 30,000 hectares of Waimiri land were flooded by the Balbina Dam.

more outside contact and more disease. The final blow was the completion of the Balbina Dam in the late 1980s. With a capacity of merely 250 megawatts—enough to meet only half the yearly power needs of the city of Manaus' 850,000 people—the dam is now widely regarded as an environmental atrocity. Even government experts concede that the size and cost of the project were so enormous that the dam should never have been built. But it was, flooding 30,000 hectares of forest and forcing the evacuation of two Waimiri villages.

All over the Amazon, the story was the same. Developers, often with government backing, brought highways, settlers, cattle ranches, mines and hydroelectric dams. Throughout Brazil, more than 90 tribes have disappeared over 90 years.

Eventually, the debate over whether or not clearing and burning large areas of rain forest contributed to carbon dioxide build-up and the greenhouse effect, turned the future of the Amazon into an international political issue. Development funds from abroad began to come with environmental and social policy strings attached. For the first time in Brazil, environmental impact studies became an integral part of the financing and licensing procedures for new hydropower plants.

"While academics, environmentalists and anthropologists had been denouncing the fate of the Indians for 20 years, development thinkers have only recently begun to consider the plight of the country's 230,000 Indians and the destruction of the environment around them," says architect and anthropologist Luiz Galvão, president of the DAM Foundation, which promotes rational use of the Amazon's timber resources.

For the Waimiri, the change in Brazilian attitudes meant deliverance from extinction. No one could erase the damage already incurred, but it was not too late to protect future generations from badly planned development schemes.

In a dramatic shift in policy, Eletronorte, which built and operates the Balbina Dam and four other hydropower plants in Amazonia, created a special Department of Studies in Environmental Effects in 1987. Its purpose was to train experts within Eletronorte who would be capable of forecasting and controlling the environmental consequences of hydropower construction.

"Eletronorte's operations in the 1970s had one goal in mind—to produce energy," says United Nations Development Programme (UNDP) Resident Representative Eduardo Gutierrez. "When the political climate changed in the mid-1980s, discussions began which addressed environmental issues. The hope was to avoid any future major disasters like Balbina. There was no stopping the growth of energy production. It just had to become more rationally planned."

In 1988, with US$300,000 in technical assistance from UNDP, Eletronorte's new Department began giving the social, cultural and health effects of hydro projects the same degree of importance as the ecological consequences of such ventures. "This was the first attempt to assess all environmental elements in one package," says civil engineer Sebastião Oliveira, national director of the project. "We finally realized that we could no longer continue to study water or soil or indigenous populations in isolation of each other."

Preparing bread for a traditional festival.

In and around Eletronorte's existing Amazon hydro projects, fisheries experts studied aquatic life. Water experts developed mathematical models for simulating the hydraulic and chemical properties of Amazonian water systems. Soil experts surveyed biological properties of nearby land. Architects and anthropologists assessed the cultural and sociological changes within local communities after a dam is built. Two medical doctors evaluated the health conditions of area populations, devising a new methodology for collecting medical data and improving the health of indigenous people.

It was these medical findings that ultimately saved the Waimiri from extinction. In 1988, Eletronorte committed $3 million to a 25-year project aimed at compensating the Waimiri for loss of land. Health, education and demarcation of land boundaries comprised the key elements of this project.

Photos by Cherie Hart / UNDP

Chief Temehe *(right)* with teacher Edith Lacerda and a young Waimiri.

Edilberto Fouseca conducts a morning class.

The ambitious effort is being managed by FUNAI, with technical support from the Institute of Tropical Medicine in Manaus, and the University of the Amazon.

The first priority was to bring urgent medical aid to the vanishing Waimiri. "There is no question that if this programme had not been put in place, the Waimiri would have become extinct," says tropical medicine expert Dr. Rômulo Saboia, who was part of the medical group hired by Eletronorte. "Malaria, measles and tuberculosis had nearly annihilated the tribe."

The tribe's critical condition warranted some unusual medical applications. "We had to break some rules," says Dr. Saboia. "The standard medical principles for vaccinations did not apply to these isolated people. We had to vaccinate the very old along with the very young, because no one had immunity against these diseases."

Dr. Saboia claims that the Waimiri now have the best health conditions of any people in Amazonia. The tribe's population growth rate has reached an astounding high of 7.5 per cent. Last year, only two Waimiri infants died — an infant mortality rate of just four per 1,000.

With the Waimiri's health under control, project staff turned to a more subtle issue: reviving the Indian's cultural heritage. A team of 10 teachers from the Department of Ethno-linguistics at the University of the Amazon created an innovative curriculum without textbooks and traditional classrooms, and without the religious agenda of previous teachers who came as missionaries. The unique approach is developing a written form for the Waimiri spoken language—Karib—while teaching people to read at the same time.

Everyone participates. Men and women, young and old, come to class each day, bringing their dreams and hopes, memories of their first contacts with white men, and recollections of favorite myths. Their stories are then spelled out phonetically on the blackboard, with the teachers seeking the group's advice about how the words should be formed. When a consensus is reached, the stories are then entered into a book for future generations of Waimiri.

"Using their own culture and history as told by themselves, the richness of their past is remembered and preserved," says Edilberto Fouseca, who, along with his wife Edith Lacerda, is part of the teaching team.

"The old ones love retelling their favorite myth—about a parrot who marries a Waimiri," says Mrs. Lacerda. "The parrot teaches her husband to sing and then tells him to share the gift of song with the other Indians. By recounting this myth, the old reiterate to the young the importance of their ancient songs as vehicles for passing on knowledge, culture and history."

Mr. Carvalho is optimistic about the Waimiri's future prospects. "By merging modern change with remnants of their past, they are, in a sense, going back to the future," he says.

While the Waimiri's cultural past is being reconstructed, their lost land cannot be recovered. The mining company has been allowed to retain the 526,000 hectares it originally claimed from the Waimiri. The 30,000 hectares flooded by the dam are gone forever. But official boundaries have now been delineated and guards control a roadblock at the main entrance to the Waimiri territory. For the time being, the Waimiri have free reign over 2.5 million hectares.

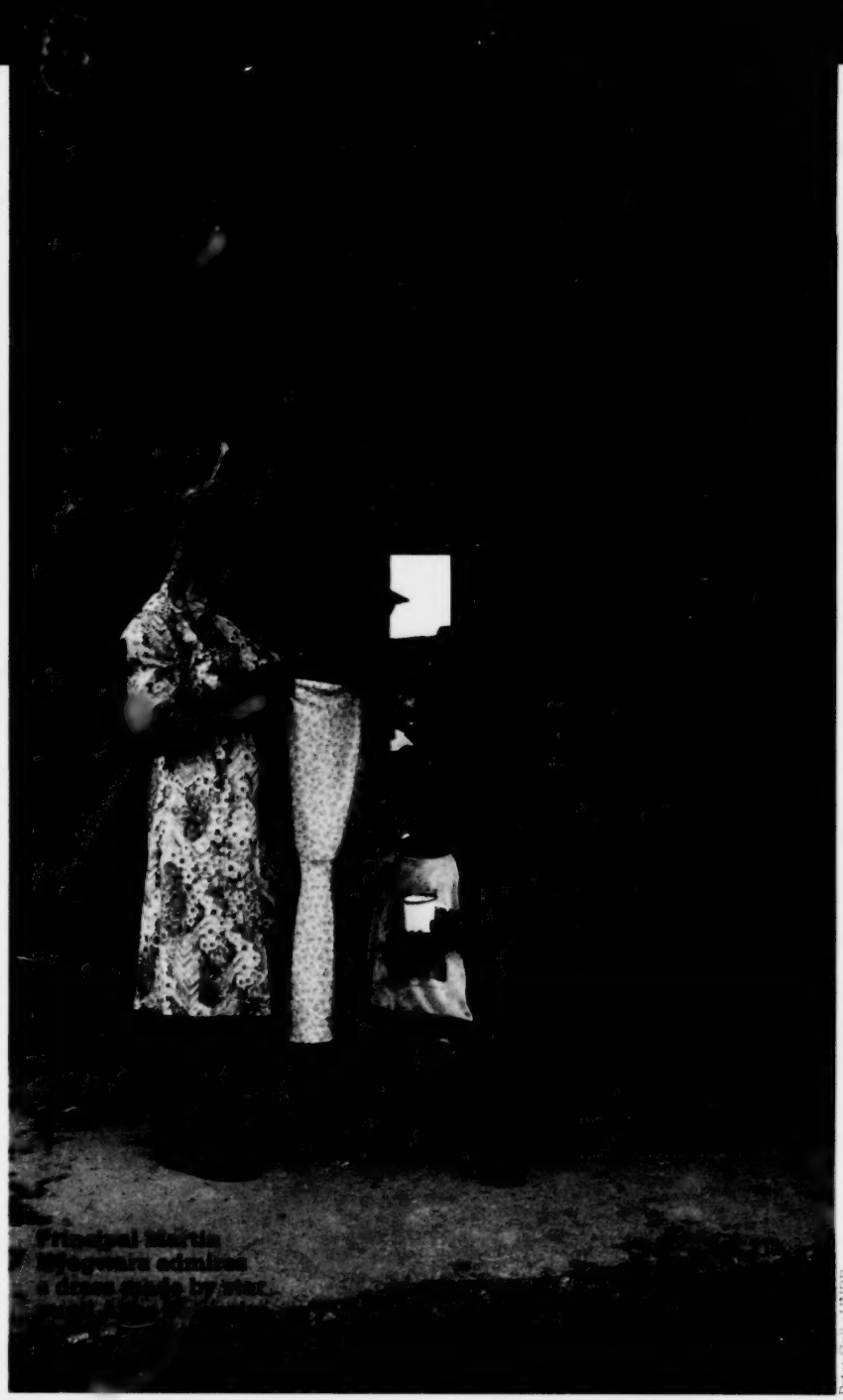
Since the project began, the Waimiri are rarely seen walking along BR-174. They have abandoned their shacks on the highway and have moved back to communal homes in the forest.

Waimiri Chief Temehe, sporting a T-shirt that depicts an Amazon jungle scene with the words "Don't Destroy" printed across it, asks all visitors for batteries. He wants to take photos of the next day's festival, and record the songs which will celebrate their young men's passage into manhood. Cameras and tape recorders are as much a part of their lives as bows and arrows. When asked if life is different for the Waimiri now, Chief Temehe replies, "We still hunt and we still fish. Our children will live as we live. And we will move further into the forest."

Many of the Waimiri women, who are preparing bread for the upcoming festival, are pregnant. Their young ones survive now, they say. Only the very old Waimiri die these days. Their ashes are sprinkled over the nearby rivers. ■

BUSINESS

KENYA



Peter Gall/ UNDP

Banking on Youth in Kenya

Start up loans and business coaching turn the out-of-work into the self-employed

By Peter Gall

Kakamega, Kenya—In her one-room shop in the Shimanyiro market in rural western Kenya, Alice Shianzira shows off the shirtwaist dress she copied out of a French mail order catalogue. The Stocks Limite catalogue lists the dress at US$38, but Ms. Shianzira will sell the copy for only $11. Even so, the sale of the dress and other garments will make an enormous difference in the life of this young mother and entrepreneur.

Ms. Shianzira is one of many young people in the Kakamega area who finished a two-year course of study at the nearby trade school only to find that there were no jobs for them when they graduated. This is not surprising in a country with an unemployment rate of over 20 per cent, and where each year 800,000 graduates compete for 150,000 job openings.

But Ms. Shianzira and 22 others from her school got a chance to go into business for themselves with community support and backed up by training, a business consultant and a loan from a commercial bank. Tailors, carpenters, foresters, farmers and other retailers and service providers have thus been launched on their own through an intensely participatory form of development.

Canvassing the trade schools—or youth polytechnics—to find new business starters is one part of an overall strategy of the Kenyan govern-

Loka Milimo Likhodia checks his lucrative kale crop.

Youth Polytechnic students train to be carpenters.

ment and the United Nations Development Programme (UNDP) to create small enterprises. The promotion of small-scale fish farming and the creation of industrial estates, where even the smallest of new enterprises can be nurtured, are other approaches. "Starting small enterprises is the best way we know to meet the needs of Kenyans themselves and maintain a high rate of participation by the people who benefit," says Judy Cheng Hopkins, UNDP's Deputy Resident Representative in Nairobi.

The polytechnic initiative is sponsored by UNDP and the Swedish government. The International Labour Organisation (ILO) implements the project under a grant of $2.5 million, of which $1.05 million is invested in credit to help 2,000 graduates become self-employed.

The first goal is to help overcome the unemployment and underemployment problem by helping likely candidates to be self-sufficient and eventually become employers themselves. Kenya needs to create six million new jobs by the year 2000, its planners say. Many of these will have to come from the informal sector, known in Kenya as "jua kali" or "hot sun" enterprises, so named for the sun-baked open air markets where so much informal business is conducted. Although the government loses tax revenues it might collect from formal businesses, it tolerates the "jua kali" because they satisfy social and economic needs.

A related goal is to provide incentives for rural inhabitants to remain in the countryside. As it is, over one-fifth of Kenya's population lives in Nairobi and its suburbs and fringe slum areas. Kenya's urban population is growing by more than seven per cent a year. This strong urban attraction worries planners because of crowding, inadequate employment and a growing crime rate. In addition, it is increasingly hard to supply clean water, sanitation and social services to the newcomers.

There is a positive aspect to rural growth stimulus, too. By starting new businesses such as dress shops, food stores, carpentry shops and small produce farms, village dwellers can have a wider choice of consumer goods and hope for new jobs, too. Market places like Shimanyiro, eight kilometres from Kakamega, are expected to be rural growth centres. In fact, it is government policy to space these markets every two kilometres along many highways in Kenya's more heavily populated rural areas.

A third aim is to improve the stature of the trade schools, which suffer from an uncertain record of job placement. Mumbetsa Youth Polytechnic, where Ms. Shianzira learned her trade and then returned for business training, has seen the number of its applicants grow by 25 per cent in one year, to the point where some have had to be turned away. "I know that the chance of starting a business has made the school more popular," says headmaster Martin Nyagwara, who helped to recruit Ms. Shianzira into the self-employment programme.

When Ms. Shianzira first graduated from school and could not find work, she began sewing at home, where she made an average monthly profit of $4.35. "No one knew about me, and I did not do well," she says. To qualify for

Photos by Peter Gall, UNDP

When their irrigation pump is not being used, the Likhodias take it home for safe keeping.

assistance, she had to be approved by a village committee as a hard worker and a good credit risk, after which she went back to school for a brief skills refresher and a 19-day course in making and following a business plan, keeping accounts and other rudiments of business. She was then extended a commercial bank loan of $400 at a floating interest rate which began at 15 per cent and rose by late 1990 to 17 per cent, to be repaid over three years. For the first year, she had a trainer-consultant looking over her shoulder to minimize the risk of failure.

Now, after a year and a half in business at the market centre, she clears $22 a month, or five times her former net income, even while making a loan repayment of $17 a month. She has bought a second sewing machine and has taken a woman into the shop as an apprentice. "Now that I am in the marketplace and can advertise, it makes all the difference," she says. Her next goal is to upgrade an old knitting machine.

Credit is the key to launching young entrepreneurs, a key that is increasingly used to unlock opportunity in developing countries. But with credit must come care. Loans which were made by the Kakamega branch of Barclay's Bank of Kenya Ltd. were guaranteed by the local community and by UNDP. This guarantee led bank officials to treat project borrowers with more latitude than they treated their regular commercial customers. A blank check was handed over to the project clients with no assurance that it would be spent on the machine, raw material or seed that was cited as the reason for the loan.

As a result, money was sometimes misspent or not paid back on time or in full. In one notorious case, a young farmer became so successful that he was exporting over a tonne of melons to England each week, but still refused to repay his loan. This made him extremely unpopular not only with the bank, but with his fellow villagers, who cannot apply for another loan as long as his is in arrears.

In order to minimize such occurrences, Barclays Bank branch manager Peter Thuita pays suppliers directly from the bank so as to reduce the temptation to divert funds. He also pays closer attention to loan repayment behaviour so that community and bank pressure can be applied to nip delinquency in the bud at the first sign of trouble. Relatives and friends must sign a loan guarantee. "We are learning which loopholes to plug," says Mr. Thuita. He is confident that the programme will in time yield new, expanding commercial enterprises that will be a source of steady income to the bank.

Both Mr. Thuita and Rose Ochieng, the Kenya regional youth officer guiding the programme together with an ILO specialist, say that women so far have proven better risks than men. "The women seem more directed, more eager to make a go of it and pay back the loan, and take fewer risks," says Ms. Ochieng. Mr. Thuita agrees that "women are more reliable than men," but worries that over the long run their aversion to risk may keep women's businesses from growing as much as the bank would like.

A man who has made good on his loan and his business is Loka Milimo Likhodia, a grower of kale, the most widely eaten green vegetable of Kenya. To shift from subsistence farming to commercial farming, he needed to irrigate land outside Kakamega so that he could sell his harvest during the dry season, when prices for kale shoot up by 60 per cent. His loan, for $1,500, let him buy a $650 pump and enough piping to reach from the nearby creek to his field, and still have $600 left for working capital. To safeguard his investment, he hauls his pump back uphill into his small home when it is not in use.

Mr. Likhodia has expanded his kale fields by four times. His monthly income before he bought the pump was $26, on which he supported his wife and three children. Now, his income is $70 a month, or $28 net after loan payments. But the loan will be fully paid off within two years, and in the meantime, he has gone from having part-time help to having three field hands, who also double as salesmen, taking the harvest to nearby secondary schools and markets. His wife has some plans, too. "We could use a new house with a metal roof," she says.

The Kakamega district has 24 youth polytechnics, of which four are now included in the UNDP-financed programme. The goal is to involve all 24 by the end of 1992, and to create self-employment for 100 young Kenyans per school. Realistically, says Ms. Ochieng, for every 100 enterprises created, 80 will thrive and 20 will fail, most of those in the first six months. As she contemplates the progress of Alice Shianzira and Milimo Likhodia, Ms. Ochieng says that both she and the ILO consider 80 per cent to be quite an acceptable level of success. ■

ENVIRONMENT

Saving the Land, Serving the People

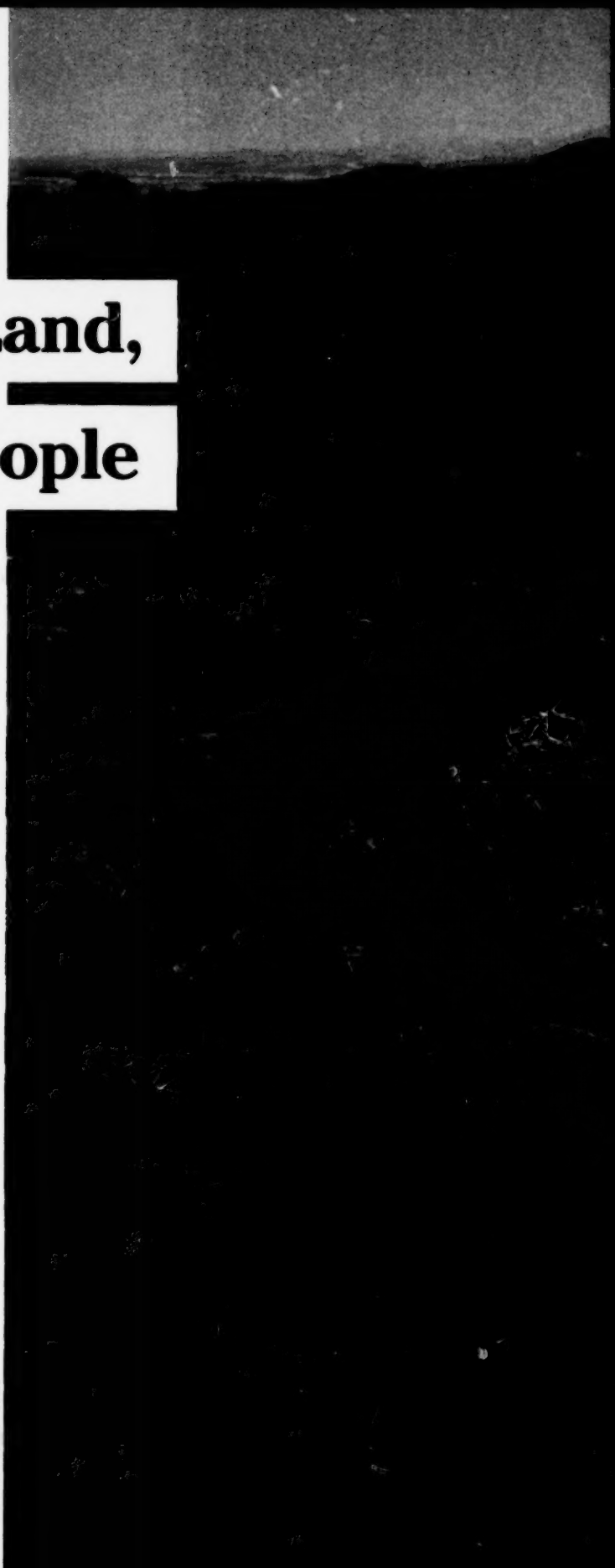
By Emma Robson

Haffouz, Tunisia—A group of agronomists gaze down at the treeless gully where a river once flowed and wonder if life will return to this parched, barren soil. Robust cacti now ring the rim of the ravine protectively, like sentinels standing guard. But the sheep nibbling at a few lonely tufts of grass are a reminder of the difficulty of persuading farmers to change their ways, which is at the root of Tunisia's new battle against desertification.

"The soil here is near the last stage of erosion," exclaims Moujahed Achouri, who is taking part in a new effort to stabilize the land. "Yet people are still grazing their sheep."

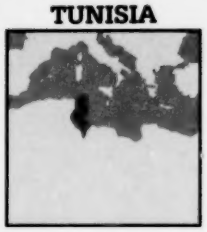
Mr. Achouri estimates that each year between 10,000 and 15,000 hectares of Tunisia's land becomes desert. A World Bank study puts the resulting loss in agricultural output at US$15 million. Only one-third of Tunisia's available land is being cultivated. And according to a report of the United Nations Environment Programme, the remaining two-thirds are threatened by desertification.

The causes of desertification are many. The food needs of an expanding



Emma Robson/UNDP

TUNISIA



Taking a new tack on soil erosion in Tunisia

population and greater numbers of livestock have strained Tunisia's cultivable land. Harsh agricultural practices have ravaged and drained it. To improve their harvests, farmers have ploughed over the land's natural slopes. Primitive hoes and ploughs which tilled the land shallowly were replaced by polydisc ploughs, now outlawed, that cut the farmers' labour and the land's life span by chopping the soil into powder and inviting the wind and rain to sweep it away. As the poorer soil resulted in lower crop yields, farmers desperate for extra income began letting infertile land go to pasture and rented it out to shepherds, who sent in armies of sheep to take the last pickings. This stripped the soil base, exposing it to erosion by wind and rain.

While soil and water conservation have long been priorities of the Tunisian government, only recently has it attempted to involve the farmers in its plans. "In the 1960s the government invested heavily in conservation measures, but all those efforts failed," says Habib Hizem, director of the Ministry of Agriculture's Department of Water and Soil Conservation. "Now the new focus is on training technicians and involving the people."

In previous attempts to prevent soil degradation, the government built terraces on farmers' land and planted conifer trees or sometimes left the terraces bare. "The farmers saw no advantage in having trees or terraces on their land," says Hadj Salem Didha, director of government activities in the Kairouan region. "To them it appeared that the government was appropriating part of their land. Before long they just ploughed over the ridges."

Cacti anchor the earth, prevent soil erosion and provide animal feed.

In its ambitious new national programme, costing $22 million a year, the government hopes to reclaim one million hectares from desertification by the year 2000. Determined that its measures should last, the government launched a nationwide publicity campaign to erase the bad memories farmers harbour of previous soil and water conservation efforts. These farmers are now being employed to build terraces, and are given fruit tree seedlings, acacia and cacti to anchor the soil. Small dams are being constructed in areas where water is scarce, and farmers are being encouraged to irrigate new crops.

Recognizing that training was insufficient in previous efforts, the government sought international assistance from the United Nations Development Programme. UNDP is funding efforts in central Tunisia to train technicians and educate farmers. The activities, based in the Kairouan, Siliana, Kasserine and Sidi Bouzid regions where soil erosion is most serious, are being supervised by the Food and Agricultural Organization of the UN.

Mr. Achouri's role is to train technicians to oversee conservation measures in an area of 8,000 hectares during a 28-month period. "We are showing the government how to improve its techniques and to make conservation measures last," says Mr. Achouri. "It is now costing the government $312 to stabilize each hectare. With proper training, it can be done more cheaply and made to last at least 10 years."

More than 50 Tunisians have been trained in interpreting aerial photographs and analysing soil and sediment samples. They have practised various dam-building techniques designed to conserve and filter water and replenish the water table. To prevent erosion by meandering rivers, they

Low stone dams prevent water run-off.

Posters exhort farmers to plough in contours to save soil and water.

Photos by Emma Robson, UNEP

now build banks during the dry season that channel the water in a direct line.

In contrast to previous efforts, each farmer is being approached individually by Mr. Achouri's team, and no work is carried out before the farmers have understood the concepts and approved them.

Now farmers in central Tunisia are ploughing flat land in curves to reduce erosion and improve filtration of water. They are also creating ridges, on which they are growing acacia, cacti and olive trees. "The acacia and cacti make good animal feed," says Mr. Achouri.

Romdane Bahrouni, who owns a 25-hectare plot of land, is one of a growing number of converts to the new practices. "I used to grow cereals but had many poor harvests," he says. "Now I am making money from cacti and hope to have a good fruit harvest too." Behind his terrace walls, anchored with cacti, Mr. Bahrouni is now growing wheat, barley, peaches, almonds and olives.

More than two years of drought have exacerbated Tunisia's soil erosion and accelerated migration to urban areas from the countryside, where unemployment is running at about 50 per cent. But Boutera Belgacem, a farmer, is in no rush to leave Wadi El Maiz these days. A trickle of a river in a wilderness until the completion of an earth dam three years ago, the wadi, or stream, has grown into a vast body of water. It is now home to sea hens and fish and a daily meeting place for farmers in the region, who come to collect water at outlets behind the dike.

"Before there was no water in the wadi except after a rainstorm," says Moujahed Bettaibi, a technician working with the project. "The dam has created a mini-climate here," he says, marvelling at the flight of two pink flamingos. Thanks to the dam, crops are flourishing in the area. Once lost in run-off, the area's precious rainfall is now stored behind the dam and allowed to seep into the earth to replenish the water table.

On the advice of technicians, Mr. Belgacem dug a well and was surprised to find water close to the surface. The level of water in his well is so high, it looks more like a storage tank. "Now I have peppers, even apples and apricots," says Mr. Belgacem, who no longer makes trips down to the wadi for water.

Each centimetre of topsoil takes more than a hundred years to form by the slow interaction of plants and rocks. At the erosion rates found in Tunisia and other African countries, the work of a century is being eliminated in a few seasons. Still, there is hope. Mr. Bettaibi grabs a handful of soft, moist earth from behind a ridge nearby fixed with cacti and acacia. "Look, minerals and organic matter are returning to the soil," he says. "It is beginning to live again." ■

UGANDA

are Coming Back

CONSERVATION

Developing wildlife management is part of Uganda's new campaign to revive tourism

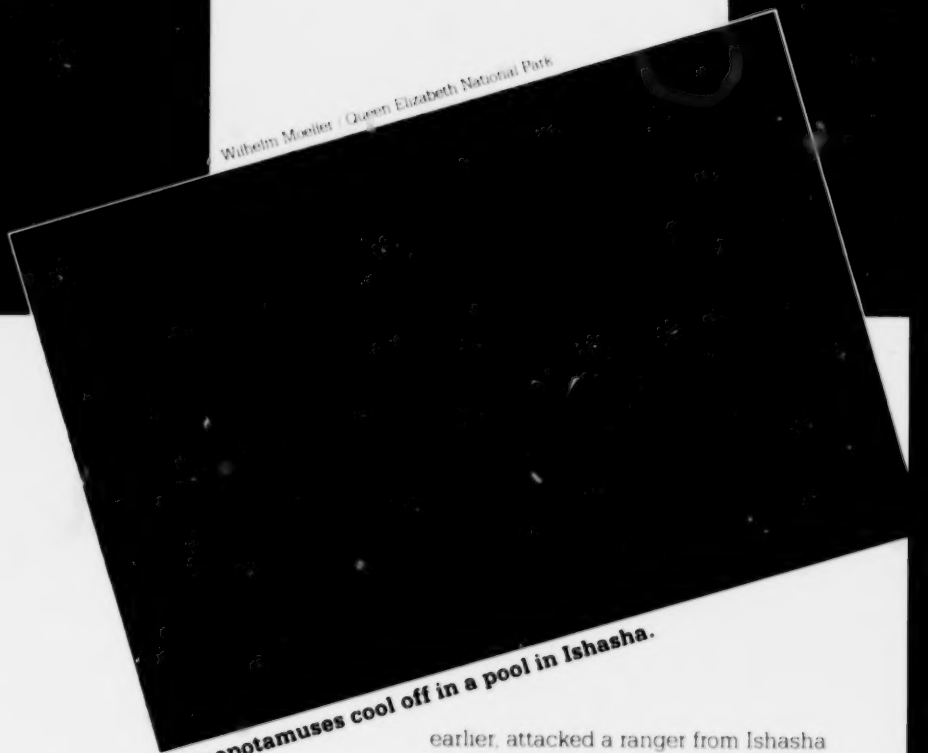
By I. Rajeswary

Mweya, Uganda—There was a time when elephants and lions, rhinoceroses and hippopotamuses roamed wild and free in the forests and savannah of Uganda. The chief attractions of the "Pearl of Africa," as it is known, were its national parks and wildlife, including 30,000 elephants. Up until 1972, tourism was Uganda's third most important foreign exchange earner after coffee and cotton. In 1971, it drew 85,000 visitors who spent US$27 million.

But tourism ground to a halt between 1972 and 1979 during Idi Amin's turbulent reign. Guns and ammunition were easily available and Amin's trigger-happy soldiers, who were given a free run of national parks, slaughtered whole herds of elephants for ivory. By 1982, the elephant population in Queen Elizabeth National Park had dwindled to 152, down from 3,000 in the 1970s.

In 1980, concerned over the decline of wildlife and tourism, the government that ousted Idi Amin turned to the

Queen Elizabeth National Park includes Lake Edward.



Wilhelm Mueller, Queen Elizabeth National Park

Hippopotamuses cool off in a pool in Ishasha.

United Nations Development Programme (UNDP) and the World Tourism Organization (WTO) for help in training a 40-man anti-poaching strike force. The new unit produced immediate results in Murchison Falls, Queen Elizabeth and Kidepo Valley national parks.

In Murchison Falls, the number of elephant carcasses encountered on ranger patrols dropped from 120 in 1980 to none in 1982, and the elephant herd there is now slowly increasing. The elephant population in Queen Elizabeth Park has quadrupled.

When Yoweri Museveni came to power in 1986, his administration sought additional UNDP assistance to rehabilitate the country's wildlife and national parks. As part of a $1.7 million project, carried out by the Food and Agriculture Organization of the UN (FAO), 49 two-way radios were distributed to Uganda's park and game officials. For the first time, all national park officials can communicate with each other and to their headquarters in Kampala, the capital.

With the help of mobile radios, rangers here in the Ishasha area—the southernmost section of Queen Elizabeth Park—have arrested 66 poachers since the project was launched two years ago. "In Africa," says Tanzanian Raphael Jingu, the FAO/UNDP project's chief technical adviser, "anti-poaching forms the backbone of wildlife management."

The poachers, who are usually armed and operate their own four-wheel drive vehicles, mainly seek hippopotamuses, buffaloes and Uganda kobs, a form of deer unique to Uganda. These days, elephants are largely spared because of the stiff penalties if caught. "Poachers flee when they see our rangers," says Abu Bakar Juma, the Ishasha sector game warden. "Being able to co-ordinate our pursuit with radios gives us a huge tactical advantage."

Statistics bear Mr. Juma out. In 1988, there were 209 poaching incidents in the park, dropping to 156 in 1989—a decline of 25 per cent. "In fact," says Dr. Eric Edroma, Uganda National Parks director, "animals which used to run when they saw people now stand and gaze at them because they are not afraid."

Uganda's rangers and wardens constantly live on edge. Last October, in a shoot-out at Murchison Falls Park, 30 poachers were killed. "I am very proud of my rangers," says Dr. Edroma. "They are well trained and equipped." Sometimes, however, his men are not so lucky. Recently, knife-wielding relatives of a poacher, who had been arrested earlier, attacked a ranger from Ishasha in a market place. The ranger lost a finger in the attack.

The work of the rangers and wardens in protecting wildlife is only one part of a larger government effort to revive tourism. Officials in this land-locked country are well aware that they must compete with neighbouring Kenya, which currently attracts the lion's share of visitors seeking African safaris.

Because services at most Ugandan hotels and lodges in the parks are minimal at best, the government asked WTO, with UNDP funding, to draft a master plan to renovate hotels, resurface pot-holed roads and upgrade the skills of those in the hotel industry. "As Uganda's economic and social conditions improve, tourism can become the country's main foreign exchange earner," says Mr. Jingu.

Even without such improvements, the number of visitors to Uganda rose from 8,622 in 1982 to almost 40,000 in 1986. The increase is due at least partially to the fact that poaching is down and the parks themselves are now better managed. Tourist arrival figures since 1986 are not available.

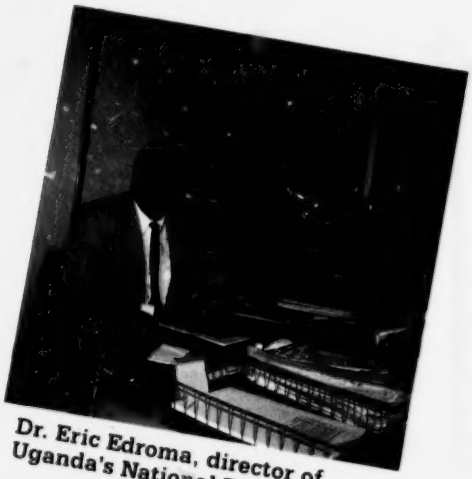
Mr. Jingu credits the new order in the parks to UNDP-financed intensive

Cleaning the day's catch beside Lake Edward.

Photos by I. Rajeswary / UNDP

Raphael Jingu radios Mweya from the Kigezi Game Reserve.

Ishasha sector game warden Abu Bakar Juma.



Dr. Eric Edroma, director of Uganda's National Parks.

training courses that gave 300 rangers and 300 park wardens a chance to upgrade their technical and managerial skills. In addition, four wardens were sent on fellowships to the College of African Wildlife and Management in Tanzania—Africa's first centre devoted to wildlife conservation.

UNDP also recruited a United Nations Volunteer, Mohamed Bereteh, 38, a wildlife management specialist from Sierra Leone. His assignment: to educate Ugandans living within Queen Elizabeth Park about the need to preserve big game. Mr. Mohamed relies on films to impress upon viewers, who include primary and secondary school students, the importance of conservation. But his task is complicated by traditional beliefs. "Some Ugandans believe that a woman's fertility increases if she eats hippo meat," says Mr. Mohamed. "And a man is considered less of a man if he does not provide hippo meat for his wife."

But Mr. Mohamed's message is slowly getting through. Only a year ago, villagers refused to attend any workshops on protecting game. But late last year, two such sessions led by Mr. Mohamed were well attended. "The Ugandans used to view these workshops as a government scam to nab poachers," he says. "What turned them around was seeing actual footage of their natural wildlife heritage and what poaching could do to them." He also reminds them that if the game is wiped out, visitors will no longer be drawn to the parks and earnings from tourism will dwindle.

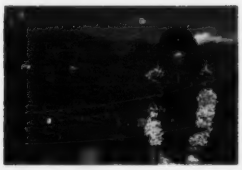
UNDP's assistance ends in December. Officials want the project extended. "The government is interested in conservation but we have limited resources," says Dr. Edroma, in explaining why his government has yet to contribute its share of $53,000 to the project. "It has other priorities. If the extension is not forthcoming, it will be a real tragedy."

Much remains to be done. A survey of Uganda's plant and animal life in the parks has yet to be carried out. More park wardens and game rangers have to be trained. More Ugandans need to be made aware of the need for conservation.

An important long term strategy, says Mr. Jingu, is to convince people living within the parks that they can profit from managing and protecting wildlife on their own initiative. The government wants to adopt an approach to community participation in wildlife management that has already been tested in Zimbabwe. Under this arrangement, the government entrusts a section of national park to the villagers who live there, provided they follow specific regulations: hunting is permitted only in designated areas, only a limited number of animals can be hunted at any one time, and tourists who want to hunt must pay a fee to the villagers, who are allowed to set the price. This gives villagers a major incentive to turn in any poachers.

"It has worked in Zimbabwe," says Mr. Jingu, "and I am sure it can work here." If the necessary funds are forthcoming, Uganda may soon have a conservation policy that employs both the carrot and the stick. ■

PROFILE



ABEL KOULANINGA

An educator willing to learn

By Mary Lynn Hanley

Bangui, Central African Republic—Searching for a subject for his doctoral thesis in the mid-1980s, Abel Koulaninga realized that little was known about his country's Pygmies. "As an education specialist I wanted to give them schooling," he recalls. "At the same time I wanted to see what effect this would have on their culture."

To study the Pygmies' own system of education, Mr. Koulaninga spent one month each with two different groups, the Aka and the Babenzélé. His first task was to gain their confidence. "That is something university studies don't teach you," he says. "When you ask them something they will tell you the exact opposite if they want to conceal the information. Or they remain silent."

But Mr. Koulaninga found a way to break through. "When I first appeared in the compound their initial tendency was to flee," he remembers, "but they soon saw that I wasn't dangerous. They immediately offered me their food—sautéed caterpillars, wild berries—and I ate it. It was pretty hard to swallow but I had to do it. That made them accept me."

While Mr. Koulaninga learned much about his hosts' way of life, he was unable to penetrate certain secrets that are deeply ingrained in Pygmy culture. Among them is the mystery behind the ability of the diagnostician-healer, one of three kinds of "specialists" the Pygmies train. (The others are the master hunter and the master singer-dancer.) Once a candidate has learned all the medicinal plants and can prepare medicines, the iris of his eye is cut and a liquid poured in to enable him to diagnose illnesses without needing to ask any questions. The Pygmies believe that this power comes from a special relationship the healer has with spirits of the forest. "When I asked what the liquid was composed of," says Mr. Koulaninga, "my informant was silent for a long time. 'If I told you that,' he said at last, 'I would no longer be a Pygmy.' "

Mr. Koulaninga's study of the Aka and Babenzélé has confirmed his respect for their intelligence and culture, from which he feels modern society might learn. He believes that their judicious use of the forest has lessons for conservationists, and that their medicinal plants might well possess properties useful in modern medicine.

Mr. Koulaninga is married to a teacher and is the father of 10 children. His schooling in the Congo, Togo, and at the Ecole Normale Supérieure and the Sorbonne in France, where he specialized in education and anthropology, have left him well prepared to carry out cultural analysis. Formerly his country's Director General of Education, he is now Secretary General of the National Commission for the UN Educational, Scientific and Cultural Organization. Last year he completed a special exhibit and film on Pygmy education which was shown at the World Conference on Education for All, in Thailand.

Looking ahead, Mr. Koulaninga would like to evaluate experiences in bringing literacy to Pygmies, as well as the effects on their health and culture when they leave the forest and their nomadic way of life. After that he wants to orient his work towards Pygmy women, who tend to lose status when the family settles down and men assume such traditional tasks as home building.

And there are still those forest mysteries to be solved. "I think everything in nature can be understood if you make the effort," he says. ■

Abel Koulaninga on a field trip to the Aka Pygmies.

Genes, Genius, and Generations

Remote peoples must be given rights to their genetic heritage

By Jason Clay

Cambridge, Mass.—The last great resource rush has begun. It's not land, minerals, timber or water at stake. This time, it's genes, and how to use them. The most genetically diverse areas of the world are inhabited by remote indigenous peoples. Their areas, and their ecological knowledge, are once again being mined—for information. Unless their rights to this material and knowledge are respected, the gene rush will leave them in the same hole as the other resource rushes.

The genetic materials in question make up the building blocks of life that can be used to make existing food crops hardier or more nutritious, and for new, more advanced foods and medicines. Indigenous residents hold the keys to these largely inaccessible, biologically diverse areas. Their knowledge of the properties of plants and their special uses often shortcuts decades of costly research and experimentation.

Examples abound. Ethiopians were the first to cultivate coffee beans. The first use of wild sesame seeds was in Sudan. Chocolate would not exist without the genetic diversity of wild cacao first found by Indians in Colombia. In the Xingu area of the Amazon, a leaf whose properties have long been utilized by Indians as a medicine has found a new application in sophisticated cataract operations. Indians are being paid to find and harvest the leaf in the forest, but receive no compensation for its use in modern surgery. Curare, a plant-based muscle relaxant used throughout the Amazon as a blow-pipe poison, is now commonly used in operations for heart disease. No Indians have been compensated for curare's discovery.

Rights to genetic material should depend, to some extent at least, on having knowledge of, maintaining, and manipulating it. But ownership is an extremely complicated issue. If an indigenous group has created a compound of two or more plants that produces known and predictable pharmacological effects, then that group should have as many rights to its discovery—even though it may have taken generations to perfect—as would any scientist or research team in any university or corporate lab.

Likewise, if, over the centuries, a group has used a plant for a specific

Paula M. Lerner / Cultural Survival

Research Director Jason Clay.

purpose and has selected it for specific properties, thereby changing the plant from its wild state through such use, then that group should have the rights to the "new," domesticated or hybrid version.

These rights are not respected anywhere in the world today. Missionaries working with an Indian group in western Brazil recently took a sample of an arrow poison made by the group and gave it to botanists who were conducting inventories of possibly useful plants. The botanists then passed on a sample of the plant-based compound to a large, US-based chemical company, the supporter of their research. The company has applied for a patent on the poison's muscle relaxant properties—the same properties that made the poison effective for use in hunting. The Indian group has not received a cent of royalties, and its rights to the material were not acknowledged in any way.

While this technology "transfer" was taking place, half of the Indians' land was seized by the Brazilian government, and the group has dwindled to a few dozen individuals.

There are strong legal grounds supporting indigenous people in their claim to rights over their resources. Under British and American law, for example, one can make the case that societies or groups of individuals have rights to materials that they have protected and allowed to flourish, even if they have never utilized them. In the US, a coastal community was awarded jurisdiction over nearby oyster beds that they had carefully conserved but never commercialized.

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This is not to deny other parties legitimate claims to genetic knowledge. Scientists, corporations, and states alike can incur considerable costs in bringing new materials to market. To date, however, indigenous people's rights to either the basic raw materials or to the knowledge that often unlocks their use has been consistently denied.

We should begin to address this imbalance. Nationally, test cases or class action suits can be launched and the press and public alerted to the issue. We can also work to establish international codes or conventions to protect the intellectual property rights of indigenous peoples, or to include intellectual property right provisions in larger international trade agreements.

More effective, however, would be self-regulated codes of conduct to guide the actions of businesses, governments and scientists. Such codes, by establishing generally accepted standards, could guarantee that some profits from genetic material, medicines, cultural artifacts or whatever are returned to those who invented or protected them. It matters little whether income is shared in the form of royalties, patent or copyright payments, profit sharing agreements, higher prices for raw materials or whatever. A single institution in each sector agreeing to compensate indigenous peoples for their knowledge is all that is needed to begin to establish such codes of behaviour.

"Just" compensation, however, will more than likely be arrived at in different ways in each context, and it is doubtful that it will ever be arrived at solely through national or international legislation. For this reason, informed consumers can play an increasingly important role in raising the compensation issue. Countries or companies that fail to compensate are often sensitive to boycotts. Ultimately, "green consumerism" could well prove decisive in support of indigenous interests. ■

Jason Clay is research director of the US-based Cultural Survival, and is the author of "*Indigenous Peoples and Tropical Forests: Models of Land Use and Management from Latin America*" (1988).

Putting it All Together

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